INSTRUCTIONS: Compliance Assurance Monitoring (CAM-01)

On October 22, 1997, EPA promulgated Compliance Assurance Monitoring (CAM) rules as codified in 40 CFR Part 64. [Federal Register 62, No. 204; Wednesday, October 22, 1997; Pages 54900 through 54947]. The CAM approach is intended to address the requirements in Title V and Title VII of the 1990 Clean Air Act Amendments [Sections 114(a)(1), 114(a)(3), and 504(b)] that EPA promulgate enhanced monitoring and compliance certification requirements for major sources and the related requirement in Title V that operating permits include monitoring, compliance certification, reporting and record keeping provisions to assure compliance. This approach establishes monitoring for the purpose of:

(1) documenting continued operation of the control measures within ranges of specified indicators of performance (such as emission, control device parameters, and process parameters) that are designed to provide a reasonable assurance of compliance with applicable requirements;
(2) indicating any excursions from these ranges; and
(3) responding to the data so that excursions are corrected.

Applicability

Except for backup utility units meeting certain conditions, the Compliance Assurance Monitoring (CAM) requirements apply to a pollutant-specific emissions unit at a major source that is required to obtain a Part 70 Operating Permit if the unit satisfies all of the following criteria:

1. The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than:

$ New Source Performance Standard (NSPS) and National Emissions Standards for Hazardous Air Pollutant (NESHAP) emission limitations or standards proposed by EPA after November 15, 1990.
$ Stratospheric ozone protection requirements under title VI of the Act.
$ Acid rain program requirements.
$ Emission limitations or standards or other applicable requirements that apply solely under an emissions trading program approved or promulgated by EPA under the Act that allows for trading emissions within a source or between sources.
$ An emissions cap or plant site emissions limit (PSEL).
$ Emission limitations or standards for which the permit already specifies a continuous compliance determination method.

2. The unit uses a control device to achieve compliance with any such emission limitation or standard; and

AControl device@ means equipment, other than inherent process equipment, that is used to destroy or remove air pollutants prior to discharge to the atmosphere. The types of equipment that may commonly be used as control devices include, but are not limited to, any of the following:

(A) Fabric filters.
(B) Mechanical collectors.
(C) Electrostatic precipitators.
(D) Inertial separators.
(E) Afterburners.
(F) Thermal or catalytic incinerators.
(G) Adsorption devices, including carbon beds.
(H) Condensers.
(I) Scrubbers, including wet collection and gas absorption devices.
(J) Selective catalytic or non-catalytic reduction systems.
(K) Flue gas recirculation systems.
(L) Spray dryers.
(M) Spray towers.
(N) Mist eliminators.
(O) Acid plants.
(P) Sulfur recovery plants.
(Q) Injection systems, including water, steam, ammonia, sorbent, or limestone injection.
(R) Combustion devices independent of the particular process being conducted at an emissions unit, including the destruction of emissions achieved by venting process emission streams to flares, boilers, or process heaters.

For purposes of CAM, a control device does not include passive control measures that act to prevent pollutants from forming, such as the use of seals, lids, or roofs to prevent the release of pollutants, the use of low-polluting fuel or feedstocks, the use of combustion or other process design features or characteristics, or inherent process equipment. If an applicable requirement establishes that particular equipment that otherwise meets this definition of a control device does not constitute a control device as applied to a particular emissions unit, then that definition shall be binding for purposes of CAM.

3. The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major (Part 70) source. For purposes of this rule, "potential pre-control device emissions" shall have the same meaning as "potential to emit (PTE)", except that emission reductions achieved by the applicable control device shall not be taken into account.

It should be noted that a pollutant specific emissions unit may have an applicable requirement for more than one pollutant and uses different control devices for achieving compliance with those applicable requirements. For example, a coal-fired boiler may have an applicable requirement for PM and SO_2 and uses a ESP for PM control and a FGD for SO_2 control. In this example, a CAM plan would be needed for both pollutants and control devices. If in the example, the source used low-sulfur coal to comply with the SO_2 instead of FGD, a CAM plan would not be needed for SO_2 (compliance monitoring may still be required to comply with 326 IAC 2-7-5(3)(A)).

Compliance Assurance Monitoring Plan

For each affected pollutant-specific emissions unit, the owner/operator shall develop a CAM plan by completing form CAM-01 or its equivalent. The CAM plan is designed to identify indicators of control device performance, corrective action trigger levels, monitoring equipment, monitoring performance criteria, data collection criteria, and implementation schedules, if necessary. Depending on the emissions unit, applicable requirement, and control equipment, there are several monitoring approaches that will satisfy CAM. These include:

$ actual emissions monitoring
$ predictive emissions monitoring systems
$ visible emissions monitoring
$ control device parameter monitoring
$ process monitoring
$ inspection and maintenance activities
$ a combination of the above

The owner/operator will have to decide which is most appropriate for their situation. In many cases, the current permit already has CAM type monitoring requirements as part of some requirements. In those cases, the owner/operator is encouraged to use the same approach for developing the CAM plan. EPA has also developed a CAM guidance document that includes examples of CAM for different types of emissions units and control devices. [Technical Guidance Document: Compliance Assurance Monitoring, August 1998, available at http://www.epa.gov/ttn/emc/cam.html]

Once the CAM plan is approved, elements of the plan will become permit conditions. If, at a later time, the Department determines that the owner or operator has not adequately responded to a parameter range excursion or emissions exceedance, the Department may require that a Quality Improvement Plan (QIP) be developed and implemented within a reasonable time period. However, the QIP is not required to be submitted with the initial CAM plan.

Provided below are specific instructions for completing CAM-01.

1. Enter the name of the source.

2. Enter the source or plant ID #, if applicable.

3. Enter the emissions unit identification number and descriptive name (e.g., EU6, particle dryer)

4. Enter the regulated pollutant (e.g., particulate matter)

5. Enter the applicable requirement rule number and brief summary (e.g., 326 IAC 6-3, 4.1 lb/hr)

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6. Enter the control device identification number and descriptive name (e.g., CD6, wet scrubber)

7. Check off which indicators of control device performance are to be used in the CAM plan. More than one may be used. Provided below is a discussion of each option but the owner or operator is encouraged to review EPA's guidance for examples that may be suitable.

   Actual emissions: If a continuous emissions monitoring system (CEMS) is already required by another regulation, the owner or operator is required to use it as their monitoring method to satisfy the CAM requirements. For example, 40 CFR Part 60, subpart D requires continuous monitoring of sulfur dioxide. If the emissions unit is subject to subpart D, the CEMS would also be used for CAM to avoid creating additional control device monitoring requirements.

   Predicted emissions: Another approach may be to use existing predictive emissions monitoring systems (PEMS) or develop a PEMS to satisfy the CAM requirements. This approach would most likely provide the owner or operator with information on the process operations and the control device operating parameters in addition to the stack emissions. In some cases, this type of monitoring could potentially allow the owner or operator to optimize production efficiency while preventing excess emissions. And, like a CEMS, a PEMS also provides a record for verifying actual compliance with the emission limit.

   Process parameters: Although the CAM rule is applicable only to those units with control equipment, it may be necessary to monitor process parameters such as total throughput where necessary to stay within the rated capacity for a control device. An example of this is residual oxygen for a boiler with a multiclone control device. In this case, the multiclone is rated to remove a percentage of the particulate emissions entering the unit and ensure compliance during "normal" operations. However, if there is a boiler upset, as indicated by abnormal oxygen readings in the boiler exhaust gases, the particulate matter loading may overwhelm the multiclone and excess emissions could occur. Therefore, in this situation, it would be appropriate to monitor both the process (e.g., boiler residual oxygen) and the control equipment.

   Control device parameters: The CAM rule is designed primarily to monitor the performance of control device equipment with the presumption that proper operation of the control equipment will ensure compliance with the emission limitation. Therefore, most CAM plans will include monitoring of one or more control device parameters such as pressure drop, temperature, water flow, or voltage, depending on the control technology. Opacity may also be used as a performance parameter for control devices used to meet particulate matter emissions limits; especially if a continuous opacity monitoring system (COMS) is already required. If opacity is used, the owner or operator will have to identify the appropriate action level just like any other parameter.

   Inspection and maintenance activities: In some cases, the performance of a control device does not vary so it is not necessary to monitor a control device parameter frequently. Instead, a routine inspection and maintenance program may be appropriate. For example, it may be more appropriate to inspect the physical characteristics of a multiclone once a year instead of routinely monitoring the pressure drop, which could vary more due to fluctuations in gas flow rates rather than actual performance. However, since it is only possible to perform inspections when the unit is not operating and it is possible that the multiclone could break (lose a cyclone), it may be appropriate to combine the inspection and maintenance program with a continuous or periodic visible emission monitoring program.

8. Values: For each of the control device performance indicators identified in item 7, specify the indicator range or operating condition that reflects proper operation and maintenance of the control device (and associated capture system, if applicable). Once these ranges or operating conditions are established, the owner or operator will be required to take corrective action anytime there is an indicator range or operating condition excursion or exceedance. The indicator ranges or designated conditions may be:

$ a single maximum or minimum value (e.g., maintaining condenser temperatures a certain number of degrees below the condensation temperature of the applicable compound(s) being processed) or multiple levels that are relevant to distinctly different operating conditions (e.g., high versus low load levels).
$ expressed as a function of process variables (e.g., an indicator range expressed as minimum to maximum pressure drop across a venturi throat in a particulate scrubber).
$ expressed as maintaining the applicable parameter in a particular operational status or designated condition (e.g., position of a damper controlling gas flow to the atmosphere through a by-pass duct).

$ established as independent between more than one indicator.

Basis: Enter the basis for the indicator ranges or operating conditions. This could be a source test, manufacturer's design criteria, engineering assessment, statistical analysis of existing data, or some other basis. If the indicator ranges or operating conditions are based on a source test, verify that the emissions unit and/or control device have not been altered since the test in such a manner as to make the values measured during the test unrepresentative of current operations.

Procedure for establishing indicator ranges: If the owner or operator is unable to establish indicator ranges or operating conditions at this time, provide the reason and describe the procedure for establishing the indicator ranges or operating conditions in the future. Depending on the control device, the procedure for establishing indicator ranges could be, but are not limited, to one of the following:

- $ maximum steam rate based on the steam rate measured during a future source test plus 10%.
- $ minimum control device temperature based on the temperature measured during a future source test minus 50 degrees.
- $ minimum and maximum oxygen level based on the average of three months of monitoring data plus or minus one standard deviation.
- $ observed range of minimum and maximum pressure drop plus a set value as a Abuffer@.

The procedure must be precise so that when the test is performed or a minimum amount of data is gathered, there will be no doubt as to what the indicator range or operating condition will be.

Test Plan and Schedule: Prepare a test plan and schedule for establishing the indicator ranges. If it is more convenient, this can be provided as an attachment. The indicator ranges or operating conditions shall be established as expeditiously as possible, but no later than six months after the permit is issued.

9. For each monitoring device that will be used for compliance assurance monitoring (e.g., continuous emissions monitors, temperature sensors, pressure gauges, etc.), provide the following information:

Location and installation specifications: Describe the location and installation specifications of the monitoring device that allow for obtaining data which are representative of the emissions or parameters being monitored. For non-instrumental monitoring approaches such as an inspection and maintenance program, this information will not be applicable so it can be left blank. For other monitoring approaches that include actual monitoring equipment, the location of the monitoring equipment or sensor can be shown on a diagram of the emissions unit and control equipment and attached to Section J. Where a diagram is not feasible, provide a description of the monitoring device location. Also describe any other installation specifications such as initial calibrations that may have been or will be performed as a result of other applicable requirements (e.g., 40 CFR 60.13) or the manufacturer's recommendations.

Describe the procedure by which the owner or operator will verify the operational status of any new or modified monitoring equipment. The owner or operator must, at a minimum, consider the manufacturer's requirements or recommendations for installation, calibration, and start-up of the equipment. When monitoring is required by another requirement such as an NSPS, the owner and operator shall also meet those requirements.

QA/QC: Describe any quality assurance and control practices that are necessary to ensure the continuing validity of the data. For continuous emissions or opacity monitoring systems or predictive emissions monitoring systems, the owner or operator should consider the QA/QC requirements in 40 CFR 60.13. For other types of monitoring, ongoing quality control measures must be adequate to ensure that the monitoring remains operational and can provide readings suitable for the purpose of measuring changes in control performance that indicate possible exceptions to compliance. At a minimum, the owner or operator should consider the manufacturer's requirements or recommendations for developing quality assurance practices.

Data Frequency and averaging period: Describe the data collection system, including the method (e.g., strip chart, data logger, computer, manual, etc.), frequency, and averaging period. The CAM rule requires that the monitoring frequency (including associated averaging periods) be designed to obtain data at such intervals that are, at a minimum, commensurate with the time period over which an excursion from an indicator range is likely to be observed based on the characteristics and typical variability of the pollutant-specific emissions unit (including the control device and associated capture system).

- $ For emissions units with the post-control potential to emit more than 100 tons per year of the regulated pollutant, the data collection frequency shall be at least 4 or more data values equally spaced over each hour of operation; unless the owner or operator can demonstrate that less frequent data collection is warranted.
- $ For emissions units with the post-control potential to emit less than 100 tons per year of the regulated pollutant, the minimum data collection frequency shall be once per day. Many types of control devices are subject to rapid changes in performance and thus the frequency design criterion could result in frequent, near continuous collection of parametric data that are subsequently averaged over an appropriate period of time (often consistent with the required minimum time for conducting a compliance test). As mentioned above, EPA has developed guidance for compliance assurance monitoring, including example monitoring approaches.

10. Justification: Provide a justification for the proposed monitoring approach. The justification can rely on any available information, including appropriate reference materials and guidance documents. If an existing requirement already establishes monitoring for the pollutant-specific emissions unit, the justification can rely in part on the existing requirement. For the types of monitoring specified below, no extensive justification should be necessary because the CAM rule creates a rebuttable presumption that the monitoring satisfies the requirements. When an owner or operator relies on one of the following monitoring approaches, all that initially should be necessary is an explanation of why the monitoring is applicable to the unit in question.

- $ presumptively acceptable or required monitoring approaches, established by the permitting authority in a rule that constitutes part of the applicable implementation plan required pursuant to title I of the Act, that are designed to achieve compliance with this part for particular pollutant-specific emissions units;
- $ continuous emission, opacity or predictive emission monitoring systems that satisfy applicable monitoring requirements and performance specifications of 40 CFR 51.214 and appendix P; 40 CFR 60.13 and appendix B; 40 CFR 63.8 and any applicable performance specifications required pursuant to the applicable subpart of part 63; 40 CFR part 75; and subpart H and appendix IX of part 266;
- $ excepted or alternative monitoring methods allowed or approved pursuant to 40 CFR part 75;
- $ monitoring included for standards exempt from the CAM rule to the extent such monitoring is applicable to the performance of the control device (and associated capture system) for the pollutant-specific emissions unit; and
- $ presumptively acceptable monitoring identified in guidance by EPA (see EPA guidance document http://www.epa.gov/ttn/emc/cam.html).

11. If the proposed CAM will not be operational when the permit is issued, provide the reason for the delay and propose an implementation schedule. In general, the Department expects that the compliance assurance monitoring will be affective on the day that the permit is issued. This does not necessarily mean that the indicator ranges must be established prior to issuance of the permit because the permit can include the procedure for establishing them within some acceptable time period (generally, not to exceed six months). However, in some situations, it may not be possible to obtain the monitoring equipment before the permit is issued. In those very limited cases, the permit will have to include an implementation schedule for installing, testing, and operating the proposed monitoring.